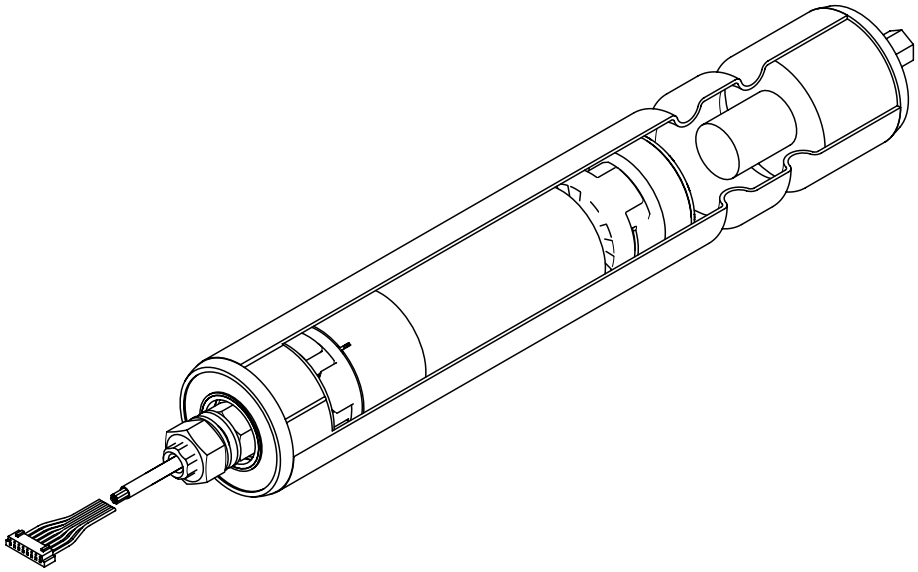
INTERROLL®

WE MAKE THE WORLD MOVE



User Manual

Interroll RollerDrive

EC100

EC110

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Introduction

Handling of the user manual

In this manual the RollerDrives EC100 and EC110 are refered to as RollerDrive EC1xx.

Content of the manual

This manual contains important advice, notes and information about the RollerDrive EC1xx in all phases of its lifecycle:

- Transport, assembly and commissioning
- Safe operation, maintenance and troubleshooting, disposal
- Accessories

Validity of the manual

The manual describes the RollerDrive EC1xx as it is delivered by Interroll.

Special application designs require validation from Interroll and additional technical instructions.

The manual is part of the product

- ➢ For trouble-free, safe operation and warranty claims, read the manual and follow the instructions before handling the RollerDrive EC1xx.
- ➢ Keep the manual near to the RollerDrive EC1xx.
- ➢ Pass the manual on to any subsequent operator or occupant of the RollerDrive EC1xx.
- ➢ Interroll does not accept any liability for malfunctions or defects due to non-observance of this manual.
- ➢ If you have any questions after reading the user manual, feel free to contact our customer service. See the last page for contact information.

Warning notices in this manual

The warning notices in this document refer to risks which may arise during usage of the RollerDrive EC1xx. For relevant warning notices, *see "Safety", page 5* and the warning notices at the beginning of each chapter.

There are three categories of danger. The following signal words are used in the document as required:

- Danger
- Warning
- Caution

Signal word	Meaning
Danger	Indicates a hazardous situation which, if not avoided, will result in death or serious injury.
Warning	Indicates a hazardous situation which, if not avoided, could result in death or serious injury.
Caution	Indicates a hazardous situation which, if not avoided, may result in minor or moderate injury.

Structure of warning notices

DANGER

Nature and source of the hazard
Possible consequence of non-observance

➢ Information about how to avoid the hazard.

Introduction

Further symbols

NOTICE

This symbol identifies possible material damage.
➢ Information about how to avoid the damage.

This symbol displays safety instructions.

This symbol marks useful and important information.

➢ This symbol marks the steps that have to be carried out.

Safety

General safety instructions

The RollerDrive EC1xx is designed according to the technical state of the art and is reliable in operation, once distributed. However, risks may still arise.

- Risks of physical injury to the user or bystanders.
- Adverse effects of the RollerDrive and other material.

Disregarding the warning notices in this manual may lead to serious injury.

- ➢ Always read the entire operating and safety instructions before starting to work with the RollerDrive and follow the information contained therein in full.
- ➢ Only instructed and qualified persons may work with the RollerDrive.
- ➢ Always keep the user manual at hand when working at the RollerDrive so you can consult it quickly if required.
- ➢ Always comply with relevant national safety regulations.
- ➢ If you have any questions after reading the operation manual, feel free to contact our customer service. See the last page for contact information.

Intended use

The RollerDrive EC1xx may only be used for industrial applications and in an industrial environment to convey goods such as parts, cartons, totes or boxes. It must be integrated in a conveyor module or a conveying system. Any other use is considered inappropriate.

Use of the RollerDrive EC1xx is only allowed in the areas described under product information.

Any changes that affect the safety of the product are not allowed.

The RollerDrive EC1xx may only be used within the given operation limits.

Unintended use

The RollerDrive EC1xx may not be used to transport persons, bulk cargo or small parts.

The RollerDrive is not intended for use under impact or shock loads.

Applications not according to the intended use of the RollerDrive EC1xx require approval from Interroll.

Qualified persons

Qualified persons are persons who read and understand the manual and, taking national regulations into account, can competently execute incidental work.

Only instructed and qualified persons may work with the RollerDrive, taking the following into account:

- the relevant manuals and diagrams,
- the warning and safety instructions in this manual,
- the system specific regulations and requirements,
- national or local regulations and requirements for safety and accident prevention.

Safety

Risks

The following list informs you about the various types of danger or damage that may occur while working with the RollerDrive EC1xx.

Persons

- Maintenance or repair work must only be executed by authorized and qualified persons in accordance with the applicable regulations.
- Before turning on the RollerDrive, ensure that no unauthorized persons are near the conveyor.

Electricity

- Only perform installation and maintenance work after you have switched off the power. Ensure that the RollerDrive cannot be turned on accidentally.

Rotating parts

- Keep fingers and hair away from the torque transmission between rollers.
- Tie up long hair.
- Do not wear loose clothing.
- Remove jewellery such as bracelets or wristbands.

Working environment

- Do not use the RollerDrive in explosive atmospheres.
- Remove equipment or material which is not required from the workspace.
- Always wear safety shoes.
- Clearly specify and monitor the way goods are placed on the conveyor.

Avoiding malfunctions in operation

- Regularly check the RollerDrive for visible damage.
- In case of fumes, unusual noise or blocked or damaged goods, stop the RollerDrive at once and ensure that the RollerDrive cannot be started accidentally.
- Contact qualified personnel immediately to find the source the malfunction.
- Do not step on the RollerDrive during operation.

Maintenance

- As the product is maintenance free, you only need to check regularly for visible damages, unusual noise and that the screws and nuts are still tightened.
- Do not open the RollerDrive.

Accidental motor starts

- Use caution while installing or maintaining the RollerDrive, or while it is under error conditions, since it may start accidently.

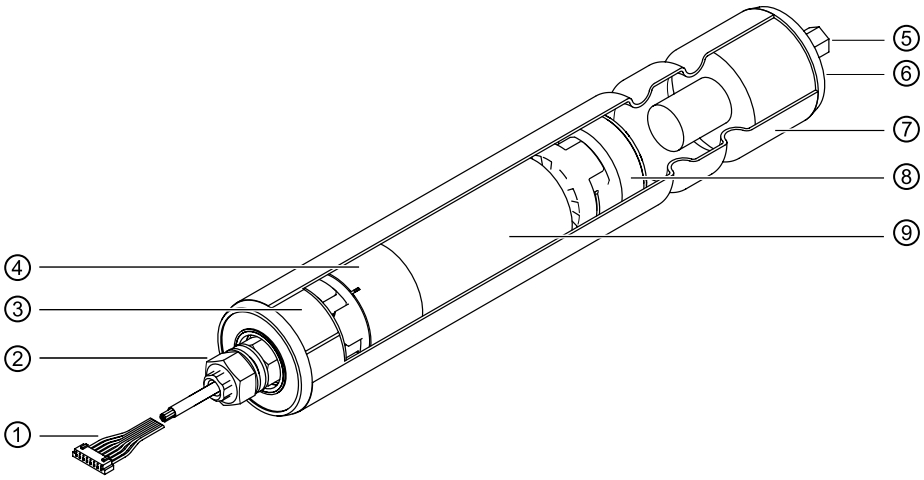
Interfaces

By assembling the RollerDrive in a conveyor module, potential hazards may occur. These are not part of this manual and have to be analyzed during the design, installation and startup of the conveyor module.

- After assembling the RollerDrive in a conveyor module, check the whole system for a new potential dangerous spot before turning on the conveyor.

Product information

Components



① Motor plug with cable
② Motor cartridge shaft
③ Fixed bearing housing assembly
④ Motor
⑤ Idler cartridge shaft
⑥ Idler bearing housing assembly
⑦ Tube
⑧ Non-slip drive
⑨ Gearbox

Product description

The RollerDrive EC1xx, a completely self-contained electronically powered roller, replaces external components such as motors and gearboxes that require frequent maintenance.

The RollerDrive EC1xx can be used in dusty and/or moist environments due to its protection class IP54. The RollerDrive EC110 is also available as an IP66 version.

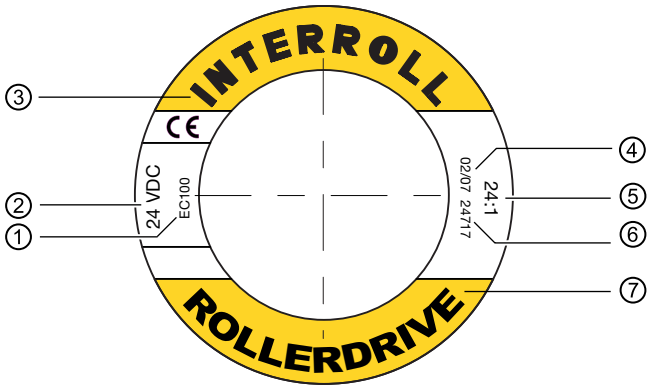
The RollerDrive EC1xx is powered by a external electronically commutated 24 VDC motor. The corresponding Interroll DriveControl (*see "DriveControls for the RollerDrive EC1xx", page 14*) is equipped with an integrated 4 quadrant motor control. This control system guarantees a constant speed over a wide load range and a constant torque over most of the selectable speed settings.

If suitably applied, the roller can be installed in the conveyor with the required controls and then left alone for the life of the product.

Product information

RollerDrive label

The specifications on the RollerDrive label are used to identify the RollerDrive EC1xx. This is required to use the RollerDrive EC1xx as intended.



Type plate

① Type of RollerDrive
② Nominal voltage
③ Manufacturer
④ Date of production
⑤ Gear ratio
⑥ Serial number
⑦ Product name

Product identification

To identify a RollerDrive, the following information is required. You may enter the values of your RollerDrive in the last column.

Information	Possible value	Own value
RollerDrive label	Motor type Gear ratio Serial number	
Tube diameter	50 mm or 1.9 in	
Tube material	Zinc-plated, galvanized, aluminum or stainless steel (with or without sleeves)	
Roller length	RL_{US} or RL_{EU} (*see "RL definition", page 15*)	
Roller transmission	*see "Groove locations", page 18*	
Idler shaft	Spring-loaded or floating (*see "Dimensions of idler cartridges", page 16*)	

Product information

Technical data

RollerDrive	EC100	EC110
Nominal voltage	24 VDC	24 VDC
Voltage range	22 to 28 VDC	22 to 28 VDC
No load current	0.6 A	0.6 A
Maximum continuous current	1.8 A	2.5 A
Maximum peak current	4.1 A	4.1 A
Mechanical performance	18 W	31 W
System efficiency (drive)	42%	52%
Maximum ripple from power supply	5%	5%
Noise emission (mounted)	55 dB(A)	55 dB(A)
Lifetime under nominal conditions	15000 h	15000 h
Maximum start/stop per minute	30	30
Protection classification	IP54	IP54
Ambient temperature for operation	0 °C to 40 °C (32 °F to 104 °F)	
Ambient temperature for transport and storage	-20 °C to 75 °C (-4 °F to 167 °F)	
Ambient temperature changes	max. 1 °K/min; 3 h; two cycles according to IEC 68-2-14	
Ambient humidity	max. 90% not condensing	
Installation altitude above sea level	max. 1000 m (max. 3300 ft)	

- UL approval is not required for RollerDrive products since they operate under a recommended maximum voltage of 30 VDC. The RollerDrive EC1xx is recognized as a UL Class II product.
- Mechanical performance, performance data and performance charts are on basis of 20 °C (68 °F).

Product information

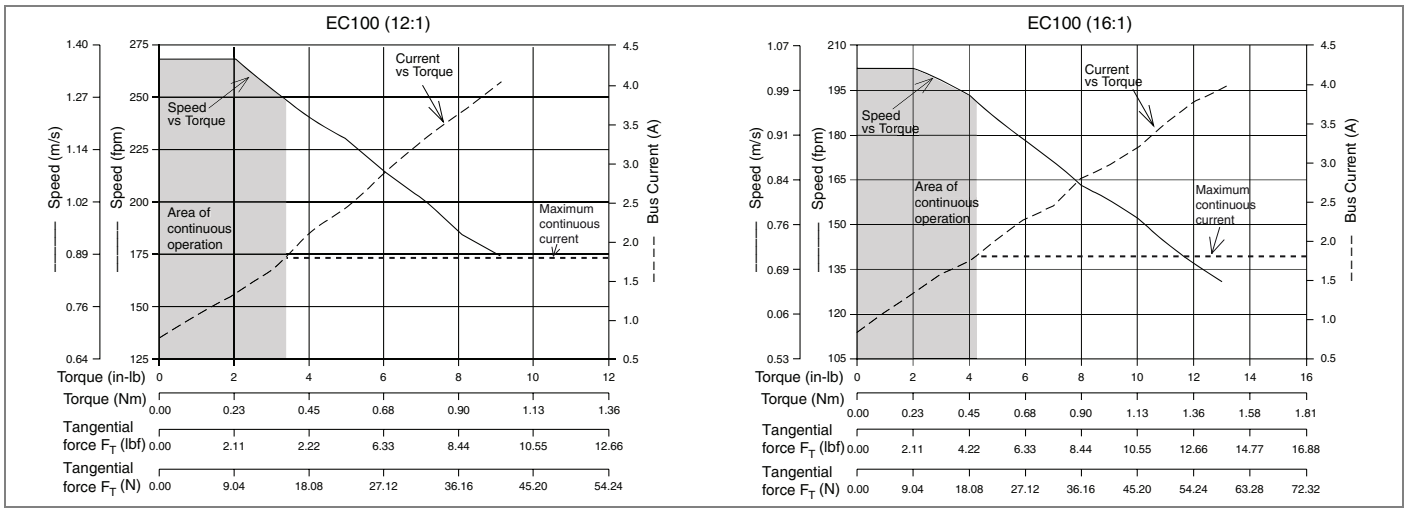
Performance data of RollerDrive EC100 with DriveControl

Gear ratio	Nominal torque (1.8 A)	Peak torque with DriveControl DC-EC100 (4.1 A)	Peak torque with DriveControl HC-EC100 (4.1 A) [1]	Maximum speed	Nominal load [2]
12:1	0.37 Nm (3.3 in-lbf)	1.0 Nm (8.9 in-lbf)	1.4 Nm (12 in-lbf)	1.32 m/s (260 fpm)	20 kg (44 lb)
16:1	0.48 Nm (4.2 in-lbf)	1.5 Nm (13.3 in-lbf)	1.8 Nm (16 in-lbf)	1.03 m/s (202 fpm)	30 kg (66 lb)
24:1	0.75 Nm (6.6 in-lbf)	2.2 Nm (19.5 in-lbf)	2.8 Nm (25 in-lbf)	0.69 m/s (135 fpm)	45 kg (99 lb)
36:1	1.17 Nm (10.4 in-lbf)	3.0 Nm (26.6 in-lbf)	3.8 Nm (34 in-lbf)	0.44 m/s (88 fpm)	60 kg (132 lb)
48:1	1.24 Nm (11.0 in-lbf)	4.0 Nm (35.4 in-lbf)	5 Nm (44 in-lbf)	0.35 m/s (68 fpm)	80 kg (176 lb)
64:1	1.82 Nm (16.1 in-lbf)	5.2 Nm (46.0 in-lbf)	6.1 Nm (54 in-lbf)	0.25 m/s (50 fpm)	105 kg (231 lb)
96:1	3.00 Nm (26.6 in-lbf)	9.8 Nm (86.7 in-lbf)	11.3 Nm (100 in-lbf)	0.17 m/s (34 fpm)	180 kg (396 lb)

[1] The HC-EC100 provides higher peak torque. Nominal torque is similar to the DC-EC100.

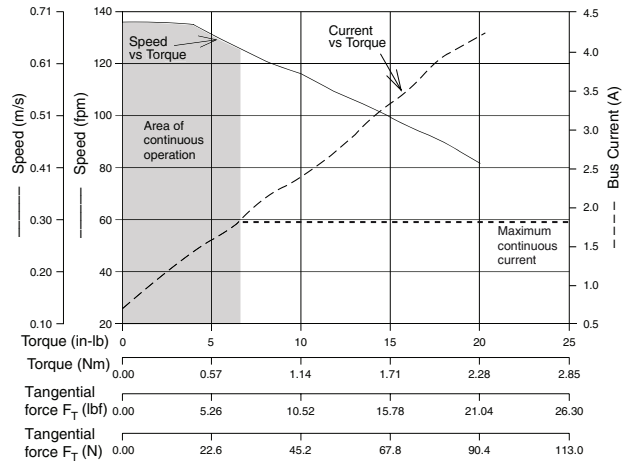
[2] Maximum static load per Roller not more than 40 kg (88 lb). Data refer to continuous operation under maximum load (S1-operation).

Performance charts of RollerDrive EC100

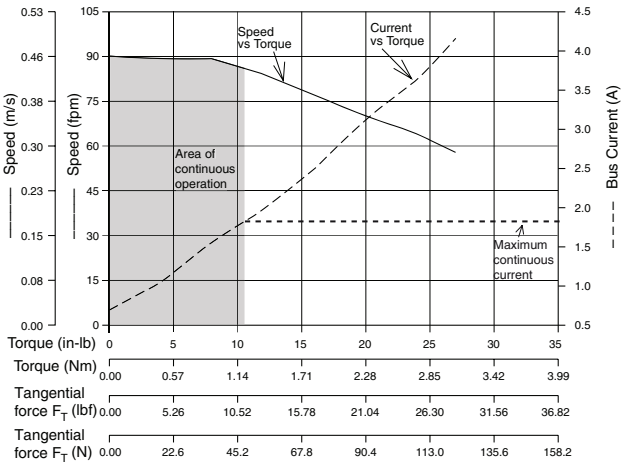


Product information

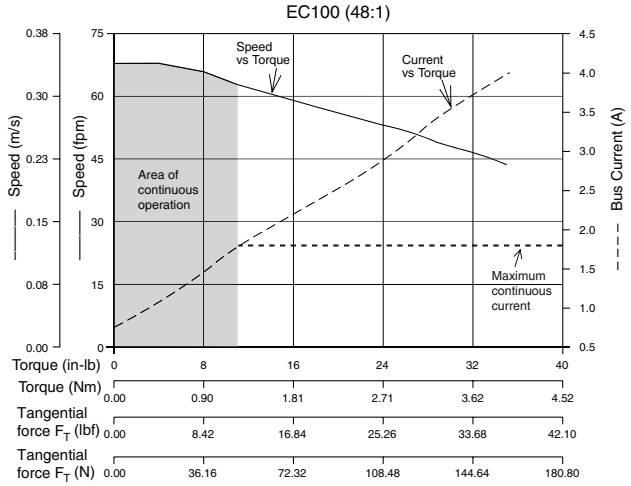
EC100 (24:1)


Speed vs Torque
Current vs Torque
Area of continuous operation
Maximum continuous current
Speed (m/s)
Speed (fpm)
Bus Current (A)
Torque (in-lb) 0 5 10 15 20 25
Torque (Nm) 0.00 0.57 1.14 1.71 2.28 2.85
Tangential force F_T (lbf) 0.00 5.26 10.52 15.78 21.04 26.30
Tangential force F_T (N) 0.00 22.6 45.2 67.8 90.4 113.0

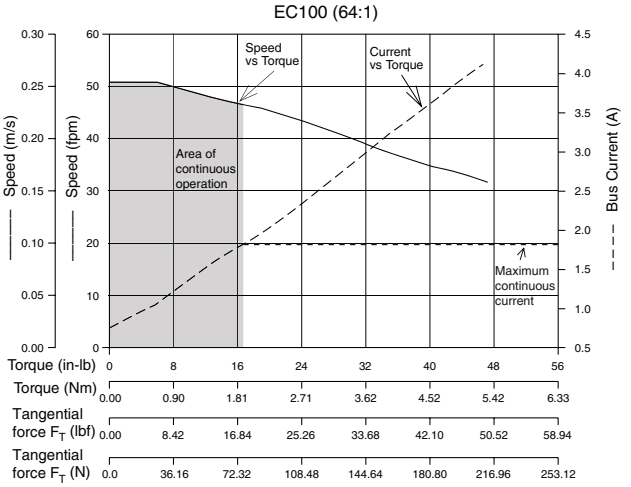
EC100 (36:1)


Speed vs Torque
Current vs Torque
Area of continuous operation
Maximum continuous current
Speed (m/s)
Speed (fpm)
Bus Current (A)
Torque (in-lb) 0 5 10 15 20 25 30 35
Torque (Nm) 0.00 0.57 1.14 1.71 2.28 2.85 3.42 3.99
Tangential force F_T (lbf) 0.00 5.26 10.52 15.78 21.04 26.30 31.56 36.82
Tangential force F_T (N) 0.00 22.6 45.2 67.8 90.4 113.0 135.6 158.2

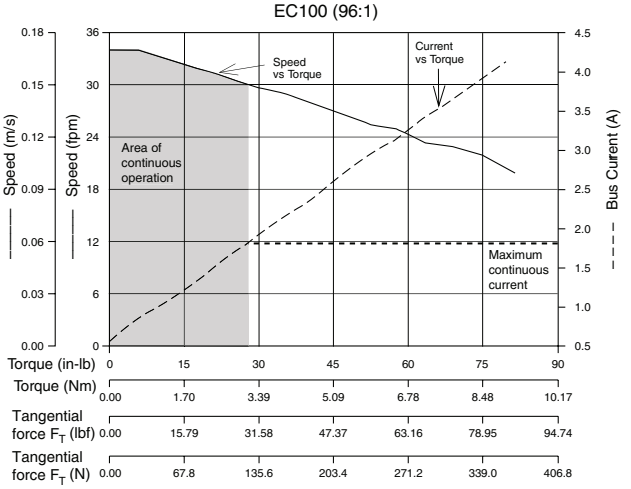
EC100 (48:1)


Speed vs Torque
Current vs Torque
Area of continuous operation
Maximum continuous current
Speed (m/s)
Speed (fpm)
Bus Current (A)
Torque (in-lb) 0 8 16 24 32 40
Torque (Nm) 0.00 0.90 1.81 2.71 3.62 4.52
Tangential force F_T (lbf) 0.00 8.42 16.84 25.26 33.68 42.10
Tangential force F_T (N) 0.00 36.16 72.32 108.48 144.64 180.80

EC100 (64:1)


Speed vs Torque
Current vs Torque
Area of continuous operation
Maximum continuous current
Speed (m/s)
Speed (fpm)
Bus Current (A)
Torque (in-lb) 0 8 16 24 32 40 48 56
Torque (Nm) 0.00 0.90 1.81 2.71 3.62 4.52 5.42 6.33
Tangential force F_T (lbf) 0.00 8.42 16.84 25.26 33.68 42.10 50.52 58.94
Tangential force F_T (N) 0.0 36.16 72.32 108.48 144.64 180.80 216.96 253.12

EC100 (96:1)


Speed vs Torque
Current vs Torque
Area of continuous operation
Maximum continuous current
Speed (m/s)
Speed (fpm)
Bus Current (A)
Torque (in-lb) 0 15 30 45 60 75 90
Torque (Nm) 0.00 1.70 3.39 5.09 6.78 8.48 10.17
Tangential force F_T (lbf) 0.00 15.79 31.58 47.37 63.16 78.95 94.74
Tangential force F_T (N) 0.00 67.8 135.6 203.4 271.2 339.0 406.8

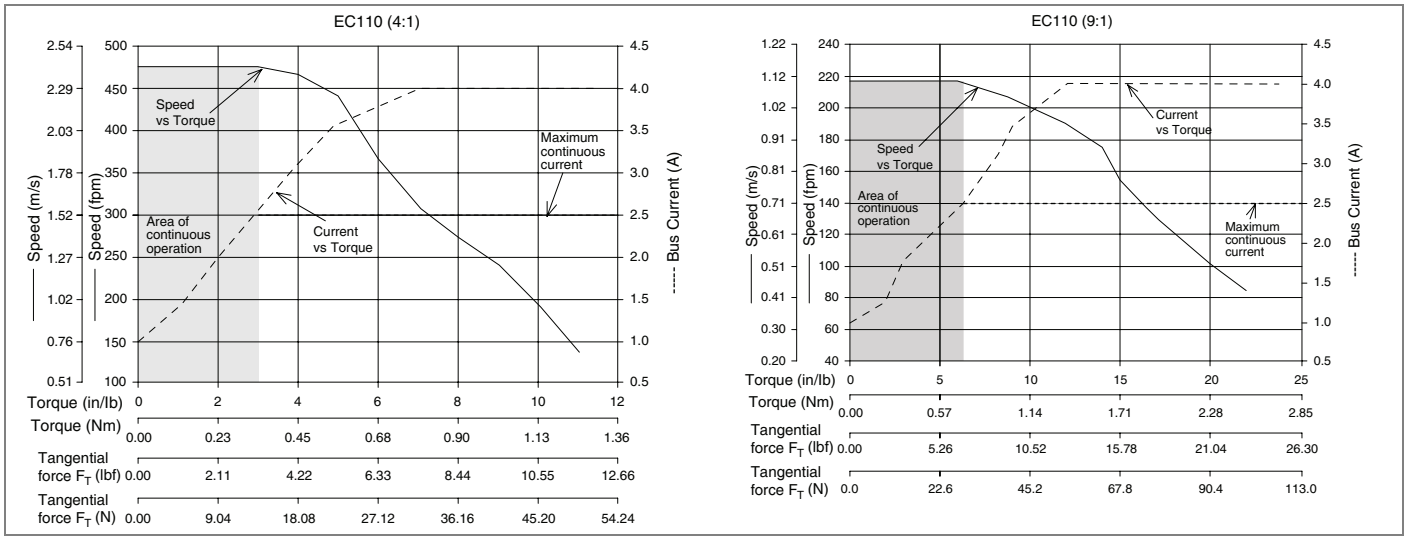
Product information

Performance data of RollerDrive EC110 with DriveControl HC-EC110

Gear ratio	Nominal torque (2.5 A)	Peak torque (4.1 A)	Maximum speed	Nominal load [1]
4:1	0.34 Nm (3 in-lbf)	1.2 Nm (11 in-lbf)	2.41 m/s (475 fpm)	16 kg (35 lb)
9:1	0.75 Nm (6.6 in-lbf)	2.6 Nm (23 in-lbf)	1.07 m/s (211 fpm)	45 kg (99 lb)
12:1	1.0 Nm (8.8 in-lbf)	3.5 Nm (31 in-lbf)	0.8 m/s (158 fpm)	60 kg (132 lb)
16:1	1.5 Nm (13 in-lbf)	4.2 Nm (37 in-lbf)	0.6 m/s (119 fpm)	90 kg (198 lb)
24:1	2.2 Nm (19.5 in-lbf)	5.8 Nm (51 in-lbf)	0.4 m/s (79 fpm)	120 kg (264 lb)
36:1	3.0 Nm (26.5 in-lbf)	9.2 Nm (81 in-lbf)	0.27 m/s (53 fpm)	180 kg (396 lb)
48:1	3.4 Nm (30 in-lbf)	11.5 Nm (102 in-lbf)	0.2 m/s (40 fpm)	210 kg (462 lb)
64:1	4.25 Nm (37.6 in-lbf)	13.2 Nm (117 in-lbf)	0.15 m/s (30 fpm)	255 kg (561 lb)

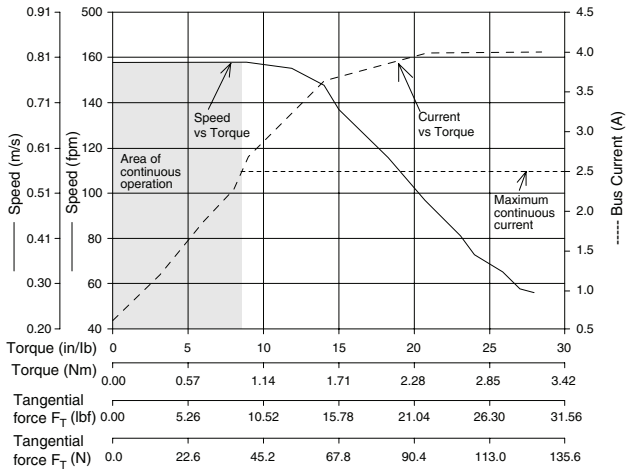
[1] Maximum static load per Roller not more than 40 kg (88 lb). Data refer to continuous operation under maximum load (S1-operation).

Performance charts of RollerDrive EC110

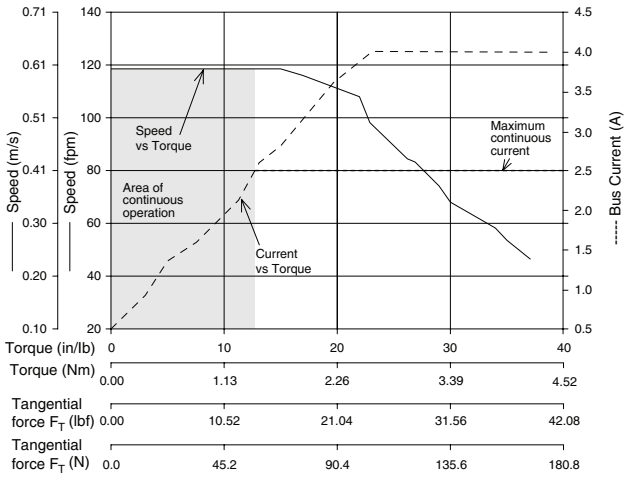


Product information

EC110 (12:1)


Speed (m/s)
Speed (fpm)
Bus Current (A)
Speed vs Torque
Current vs Torque
Area of continuous operation
Maximum continuous current
Torque (in/lb) 0 5 10 15 20 25 30
Torque (Nm) 0.00 0.57 1.14 1.71 2.28 2.85 3.42
Tangential force F_T (lbf) 0.00 5.26 10.52 15.78 21.04 26.30 31.56
Tangential force F_T (N) 0.0 22.6 45.2 67.8 90.4 113.0 135.6

EC110 (16:1)


Speed (m/s)
Speed (fpm)
Bus Current (A)
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Current vs Torque
Area of continuous operation
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Torque (in/lb) 0 10 20 30 40
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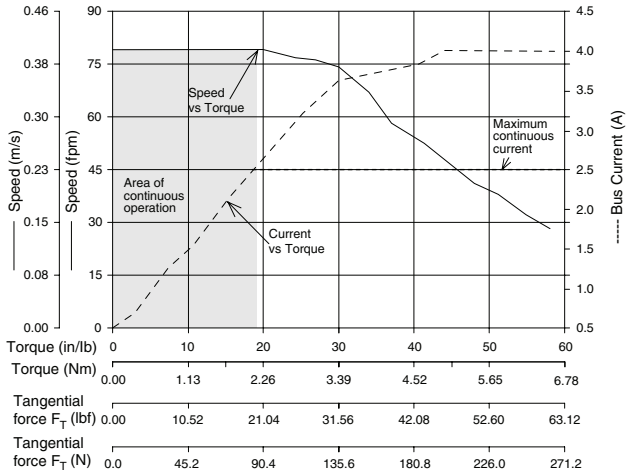
Tangential force F_T (lbf) 0.00 10.52 21.04 31.56 42.08
Tangential force F_T (N) 0.0 45.2 90.4 135.6 180.8

EC110 (24:1)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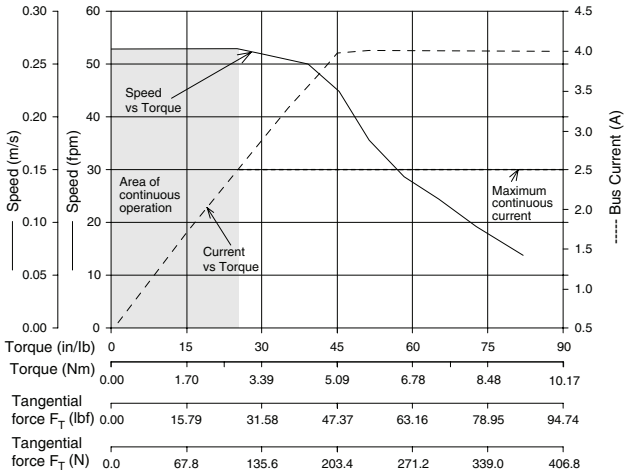
Area of continuous operation
Maximum continuous current
Torque (in/lb) 0 10 20 30 40 50 60
Torque (Nm) 0.00 1.13 2.26 3.39 4.52 5.65 6.78
Tangential force F_T (lbf) 0.00 10.52 21.04 31.56 42.08 52.60 63.12
Tangential force F_T (N) 0.0 45.2 90.4 135.6 180.8 226.0 271.2

EC110 (36:1)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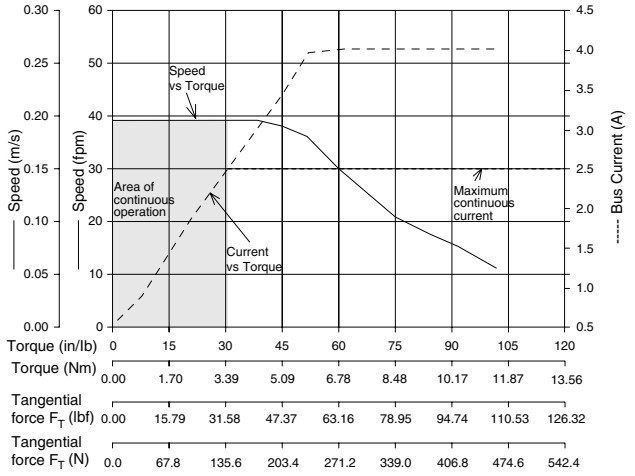
EC110 (48:1)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Speed (fpm)
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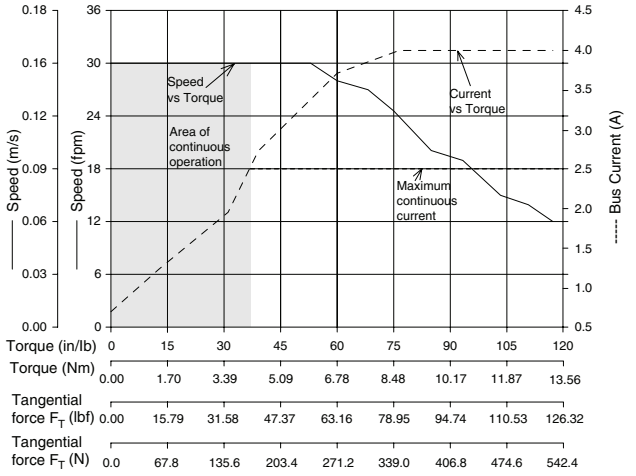
Current vs Torque
Area of continuous operation
Maximum continuous current
Torque (in/lb) 0 15 30 45 60 75 90 105 120
Torque (Nm) 0.00 1.70 3.39 5.09 6.78 8.48 10.17 11.87 13.56
Tangential force F_T (lbf) 0.00 15.79 31.58 47.37 63.16 78.95 94.74 110.53 126.32
Tangential force F_T (N) 0.0 67.8 135.6 203.4 271.2 339.0 406.8 474.6 542.4

EC110 (64:1)


Speed (m/s)
Speed (fpm)
Bus Current (A)
Speed vs Torque
Current vs Torque
Area of continuous operation
Maximum continuous current
Torque (in/lb) 0 15 30 45 60 75 90 105 120
Torque (Nm) 0.00 1.70 3.39 5.09 6.78 8.48 10.17 11.87 13.56
Tangential force F_T (lbf) 0.00 15.79 31.58 47.37 63.16 78.95 94.74 110.53 126.32
Tangential force F_T (N) 0.0 67.8 135.6 203.4 271.2 339.0 406.8 474.6 542.4

Product information

DriveControls for the RollerDrive EC1xx

Interroll recommends using the RollerDrive EC1xx in combination with the corresponding Interroll DriveControl.

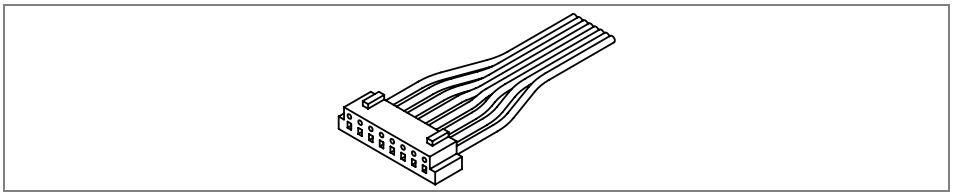
RollerDrive	Corresponding DriveControl	Description
EC100	DC-EC100	Motor control card without ZPA functionality
	HC-EC100	ZPA and motor control on one board, can be used separately
	Z-Card EC	Multi (up to 4) zone control card (only in combination with DC-EC100 or HC-EC100 in motor control mode)
EC110	HC-EC110	ZPA and motor control on one board, can be used separately
	Z-Card EC	Multi (up to 4) zone control card (only in combination with HC-EC110 in motor control mode)

For DriveControl details, see the corresponding operation manual, catalogs or publications on www.interroll.com.

Motor plug

The motor plug for RollerDrive EC1xx is manufactured by AMP, consisting of a plug (AMP-part # 175778-8) and terminal pins (AMP-part # 1-175102-1). In case of ripped out cables the plug can be repaired using a crimping tool available directly from AMP (part # 9184381).

Motor lead wire color code



Color	Lead	Description
Black	Phase C	Motor leads with AWG 22 (0.32 mm^2)
White	Phase B	
Red	Phase A	
Yellow	S3 (C)	Hall effects sensor leads with • AWG 26 (0.13 mm^2) for EC100 • AWG 22 (0.32 mm^2) for EC110
Orange	S2 (B)	
Brown	S1 (A)	
Blue	4.5 to 20 VDC	
Green	Ground	

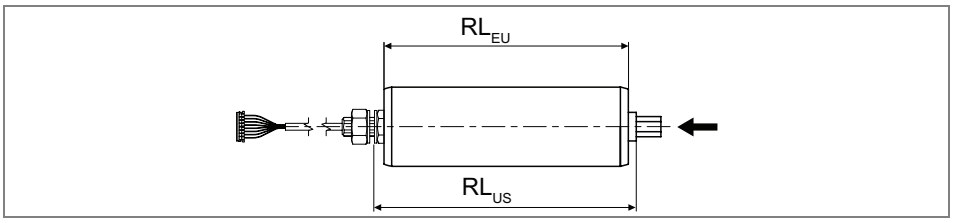
Product information

RL definition

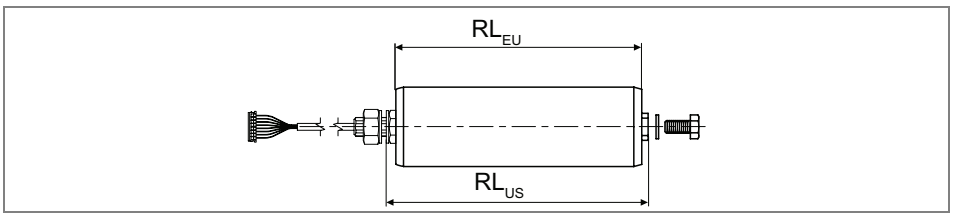
There are two definitions of the roller length RL:

- RL_{EU} is mainly used in Europe and Asia
- RL_{US} is mainly used in North and South America

Spring loaded

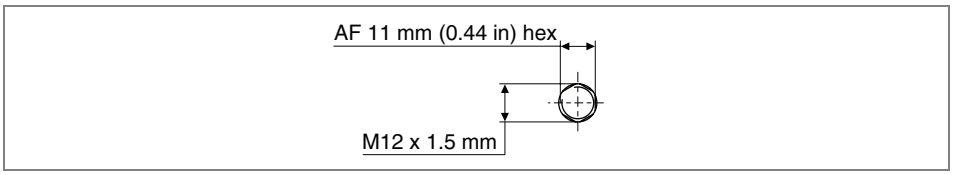


Female threaded M8 (FTM8), floating

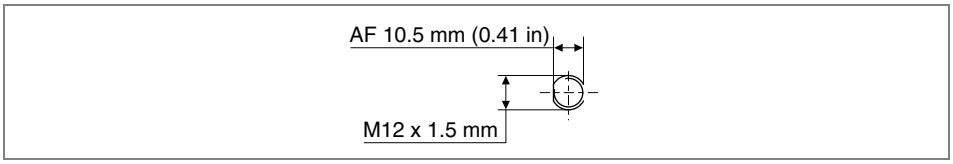


Dimensions of motor shaft

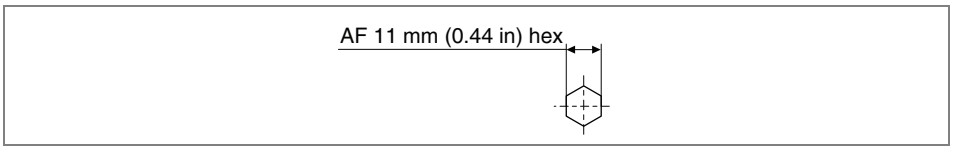
Threaded hex shaft (for EC100/EC110)



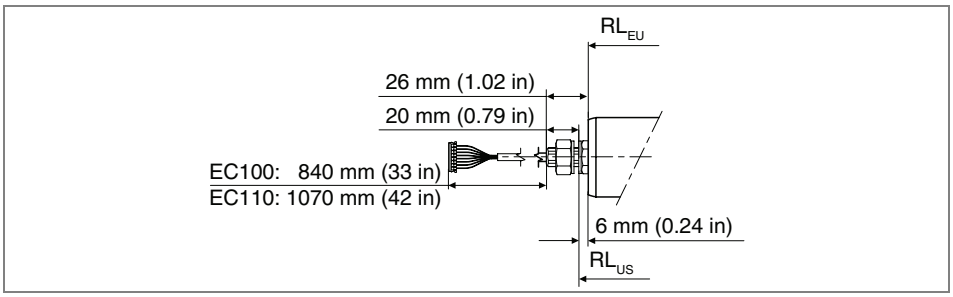
Threaded H-shaft (for EC100/EC110)



Non-threaded solid hex shaft (for EC110)

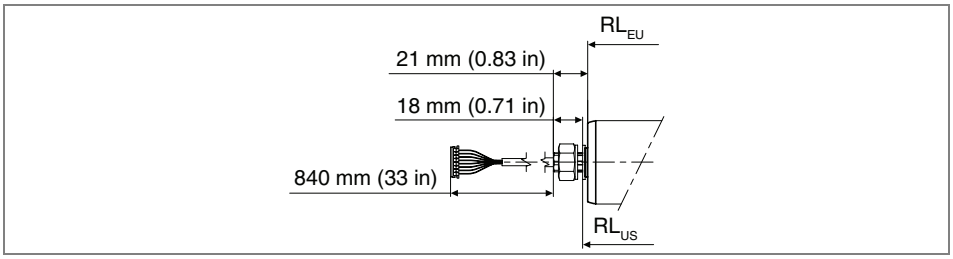


Standard configuration

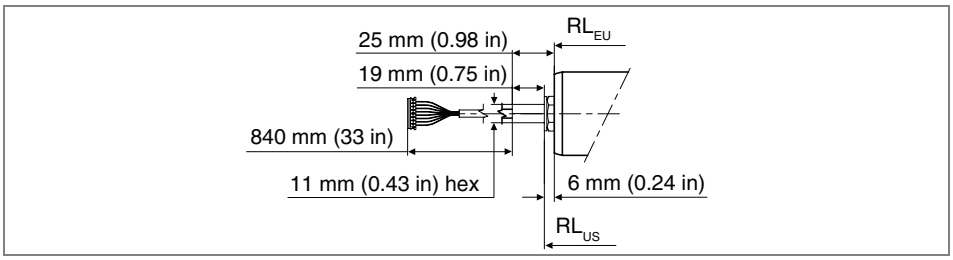


Product information

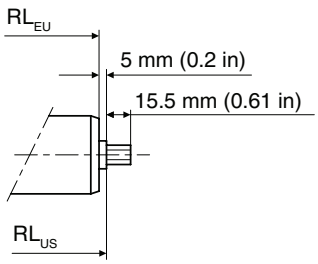
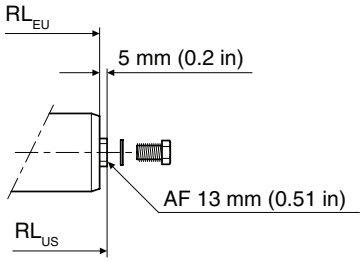
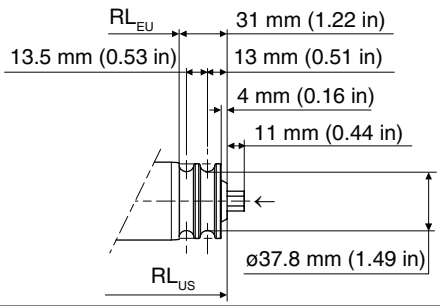
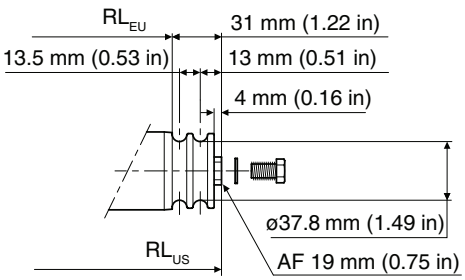
EC110 IP66 configuration



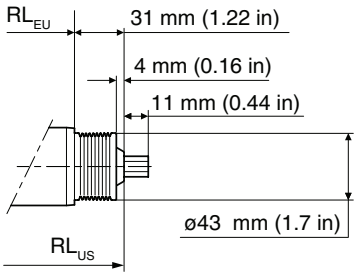
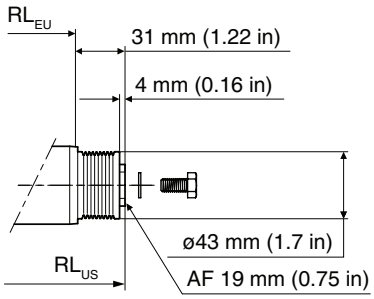
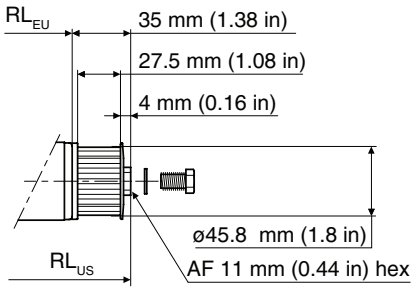
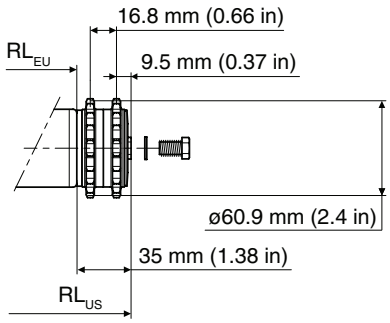
EC110 solid hex configuration



Dimensions of idler cartridges

	11 mm (0.44 in) hex, spring-loaded	Female threaded M8 (FTM8), floating
Straight		
O-ring hub		

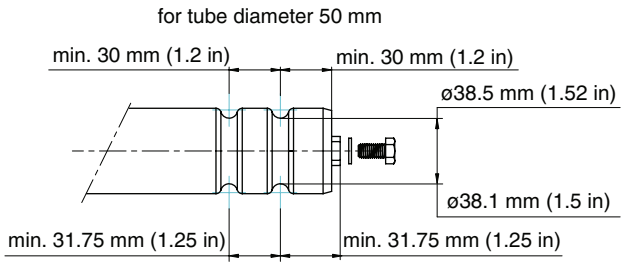
Product information

	11 mm (0.44 in) hex, spring-loaded	Female threaded M8 (FTM8), floating
Multi-rib hub		
Timing belt hub		Poly-Chain GT; 8 mm pitch; 18 teeth 
Roller chain hub		11 mm (0.44 in) hex shaft; 3/8 in pitch; 20 teeth 

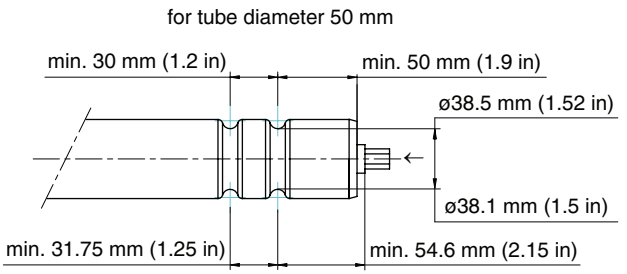
Product information

Groove locations

FTM8, floating, single bearing


for tube diameter 50 mm
min. 30 mm (1.2 in)
min. 30 mm (1.2 in)
ø38.5 mm (1.52 in)
ø38.1 mm (1.5 in)
min. 31.75 mm (1.25 in)
min. 31.75 mm (1.25 in)
for tube diameter 1.9 in

Spring-loaded hex, double bearing


for tube diameter 50 mm
min. 30 mm (1.2 in)
min. 50 mm (1.9 in)
ø38.5 mm (1.52 in)
ø38.1 mm (1.5 in)
min. 31.75 mm (1.25 in)
min. 54.6 mm (2.15 in)
for tube diameter 1.9 in

Other tube groove locations possible.

Conical RollerDrives

Conical RollerDrives are only available in three versions:

- Without roll-to-roll transmission (no grooves)
- With grooved tubes [RL_{EU} = B/F - 11 mm (0.44 in) / RL_{US} = B/F - 3 mm (0.12 in)]
- With O-ring hub [RL_{EU} = B/F - 37 mm (1.46 in) / RL_{US} = B/F - 3 mm (0.12 in)]

B/F: Width **b**etween the conveyor **f**rames

Due to the conical sleeves they are only available in certain standard lengths.

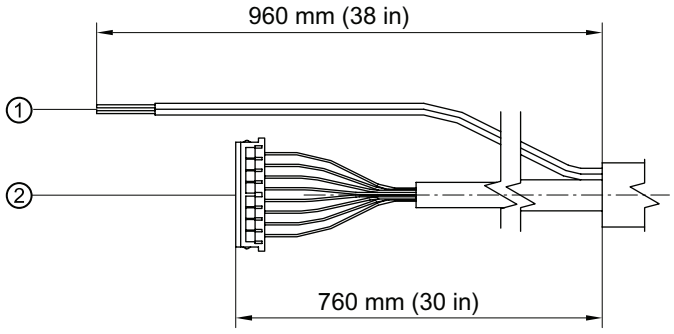
For conical RollerDrives there must be a 1.8° angle compensation on the motor end to avoid bending forces on the RollerDrive.

For details contact Interroll, see the catalogs or refer to publications at www.interroll.com.

Product information

Failsafe brake for RollerDrive EC100

Optionally, the RollerDrive EC100 is also available with a failsafe brake (then called EC100B), which is designed to hold the RollerDrive in position in case of a power shut down, mainly at declines. The brake shall be used as holding brake only and not as a dynamic brake (e.g. not for deceleration or positioning).



① Brake leads
② Motor plug

Recommended break leads connection:
- Green lead with red stripes: 24 VDC
- Green lead with blue stripes: GND

The fail save brake is not sensitive to electrical polarity, so it can be connected bi polar; for clearness it is recommended to connect them as stated above.

Technical data

Nominal voltage	24 VDC
Voltage range	0 to 28 VDC
Brake locking voltage	max. 6.0 VDC
Brake releasing voltage	min. 12.2 VDC
Current consumption	0.167 A
Internal resistance	144 Ω
Lead wires	AWG 22 Teflon

Gear ratio	Static holding torque
24:1	8.4 Nm (74.3 in-lbf)
36:1	12.6 Nm (111.5 in-lbf)
48:1	16.8 Nm (148.7 in-lbf)
64:1	22.4 Nm (198.2 in-lbf)
96:1	33.6 Nm (297.4 in-lbf)

The RollerDrive EC100 (12:1) and RollerDrive EC100 (16:1) are not available with failsafe brake.

Transport and storage

Transport

- Each RollerDrive is covered at its ends with end-protectors.

⚠ CAUTION

Risk of injury due to improper transport

➢ Transport may only be carried out by qualified and authorized persons.
➢ Observe the following notices.

➢ Do not stack pallets.
➢ Check the fixation of the RollerDrives before transport.
➢ Avoid hard shocks during transport.
➢ Check each RollerDrive visually for damage after transport.
➢ In case of damage, take photos of the damaged parts.
➢ To maintain the warranty, report any damage caused by transport instantly to the transport company and Interroll.
➢ Do not transfer the RollerDrives between warm and cold environments. This may cause condensing water.

Storage

⚠ CAUTION

Risk of injury due to improper storage

➢ Do not stack pallets.
➢ Do not stack more than four carton boxes.

With IP66 RollerDrives, due to the sealing, condensing water inside the RollerDrive may cause corrosion.

➢ Check each RollerDrive for damage after storage.

Assembly

Warning notices concerning assembly

⚠ CAUTION

Rotating parts and accidental motor starts
Risk of pinched fingers

- ➢ Do not insert fingers between the RollerDrive and the O-ring belt, multi-rib belt or roller chain.
- ➢ Install a protection device (such as a guard plate) to prevent fingers from getting trapped in the O-ring belt, multi-rib belt or roller chain.
- ➢ Install an appropriate warning on the conveyor.

NOTICE

Risk of damage leading to failure or shortened life expectancy of the RollerDrive

- ➢ Observe the following notices.

- ➢ Do not drop or mishandle the RollerDrive to avoid internal damage.
- ➢ Check each RollerDrive visually for damage before assembly.
- ➢ Do not hold, carry, or support the RollerDrive by the wires extending out of the mounting shaft to avoid damage to the internal solder joints.
- ➢ Do not force the RollerDrive when inserting it into the conveyor frame. It should fit easily into the holes in the frame.
- ➢ Ensure that the proper torque (see assembly instructions) is applied to the RollerDrive hex nut to prevent the shaft spinning in the frame and the wires twisting.
- ➢ Do not twist the motor cable.

Assembly

Warning notices concerning the electrical installation

NOTICE

Risk of damage to the motor and/or the wires of the RollerDrive

➢ Observe the following notices.

- ➢ The electrical installation may only be executed by qualified and authorized persons.
- ➢ Disconnect the power before installing, removing or rewiring the RollerDrive.
- ➢ Do not apply AC current to the RollerDrive or DriveControl device at any time as this will cause irreparable damage.
- ➢ Do not apply too much stress to the connector pins. Bending the wires at the connector and forcing the star washer over them can cause damage to the insulation of the wires, which could result in failure of the RollerDrive.
- ➢ Ensure that the RollerDrive, the DriveControl and the 24 VDC power source are properly earthed through the frame or supporting structure in which the RollerDrive and the DriveControl are installed. Failure to do so could cause the buildup of static electricity or ground loops and can cause the motor or DriveControl to malfunction or fail prematurely.
- ➢ Do not bend the motor cable at the motor shaft. Leave a minimum of 12 mm (0.5 in) of excess cable for stress relief. (Minimum motor cable bend radius 5x cable diameter.)
- ➢ Do not spin the RollerDrive manually, as this generates an induction voltage which could damage the DriveControl.

Setting up a roller conveyor

A roller conveyor usually consists of conveyor zones. Each zone is composed of one RollerDrive and several idler rollers which are driven by the RollerDrive. The idler rollers can be linked using either flat belts, timing belts, O-ring belts, multi-rib belts or roller chains. The number of idler rollers in each zone depends on the application.

➢ Before installing the RollerDrive, define the position of the conveyor zone within the conveyor and the position of the RollerDrive within the conveyor zone.

Locate the RollerDrive near the center of the zone or the center of gravity of the object being conveyed to improve the transmission of the force between RollerDrive and goods.

Assembly

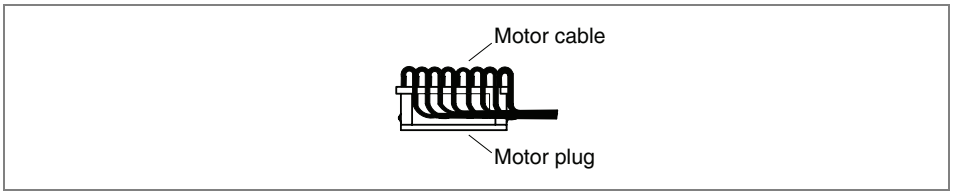
Inserting the RollerDrive EC1xx in the conveyor frame

Inserting the motor shaft

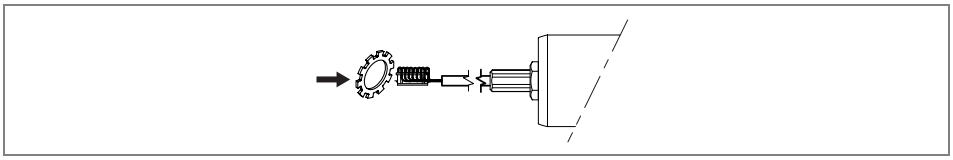
➢ Remove the shipping tube from the RollerDrive/harness assembly.

Use caution when cutting the tie-wrap from the harness. Do not cut any of the sleeving or wires on the assembly.

To pass the motor plug through holes, fold the motor cable as follows.



➢ Place a first star washer on the motor shaft.



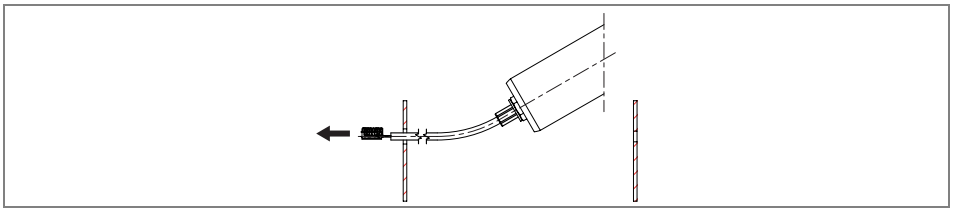
➢ Pass the motor cable through the 11 mm (0.44 in) hex hole in the conveyor frame and insert the motor shaft into the hex hole.

NOTICE

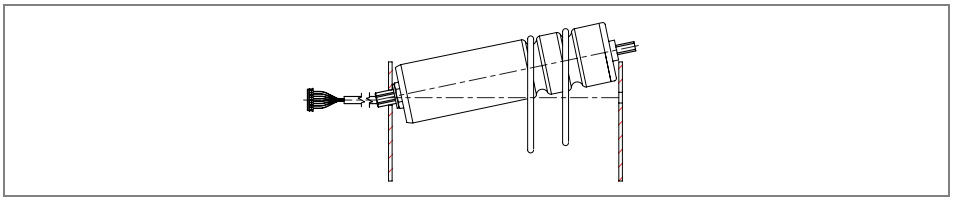
Internal damage of the RollerDrive due to improper handling

➢ Do not install the securing hardware at this time.

➢ Do not bend the motor cable at the motor shaft. Leave a minimum of 12 mm (0.5 in) of excess cable for stress relief.



➢ Place one or two standard 4 mm, max. 5 mm (3/16 in) O-rings or RollerDrive belts (if used) on the idler end of the RollerDrive.



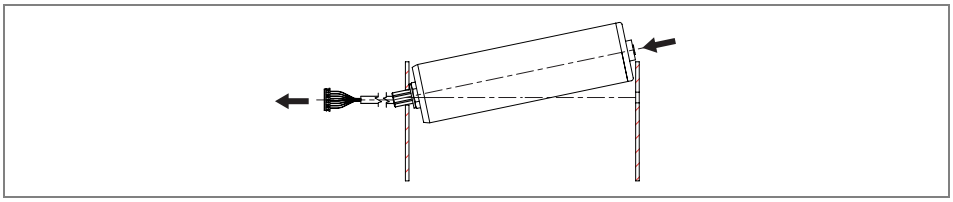
Assembly

Inserting the idler shaft

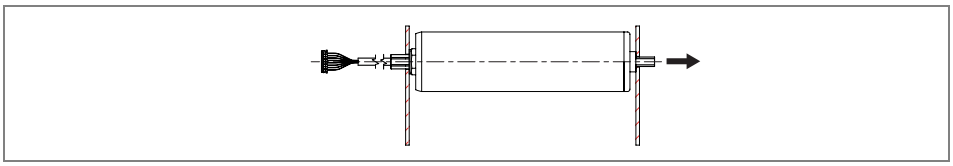
How the idler shaft is inserted in the conveyor frame depends on the idler shaft option. The easiest installation option is the spring-loaded shaft option.

Inserting the spring-loaded idler shaft

- Push the spring-loaded idler shaft inwards and align the shaft with the hole in the frame.

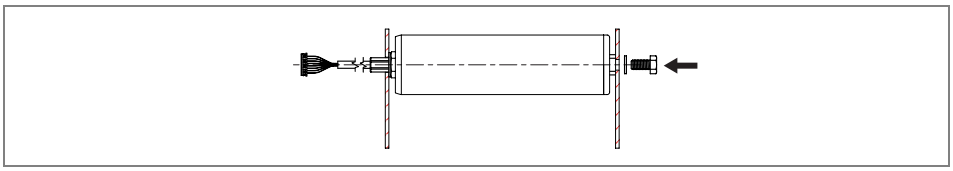


- Release the idler shaft and allow it to pop into the hole in the frame.



Inserting the FTM8 idler shaft

- Place a split lock washer onto a M8x20 bolt.
- Align the RollerDrive with the hole in the frame and thread the M8 bolt and split lock washer into the shaft. Use a wrench to prevent the idler shaft from turning (width across flats AF 13 mm or AF 19 mm, depending on the idler type, *see "Groove locations", page 18*).



- Use a torque wrench to tighten the bolt with 20 Nm (177 in-lbf) until the split washer is completely compressed.

For information about assembling the idler rollers, see the corresponding manuals or information at www.interroll.com.

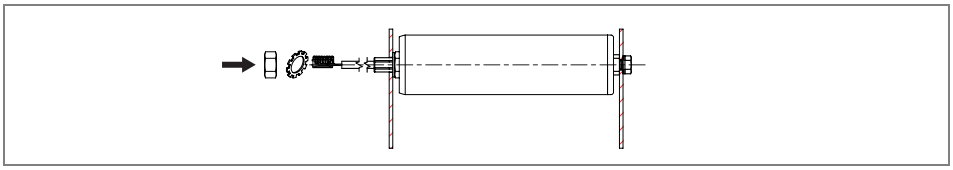
Assembly

Securing the RollerDrive in the conveyor frame

There is a nut and a washer on the shaft next to the tube. This inner nut has been preassembled and secured in the correct position.

Do not adjust the inner nut and washer.

- Prevent the inner nut from rotating with a flattened wrench AF 19 mm. For IP66 configuration use a flattened wrench AF 36 mm.
- Slip a second star washer and a hex nut over the motor cable and screw it onto the threaded motor shaft. Ensure that star washers are mounted on both sides of the profile.

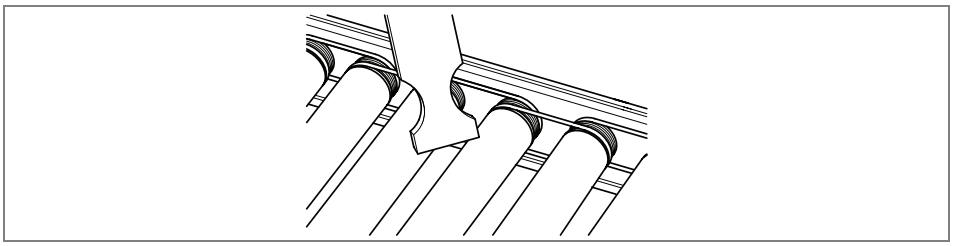


- Use a torque wrench to tighten this outer nut with 35 Nm (308 in-lbf) while ensuring that the inner nut is not rotating.

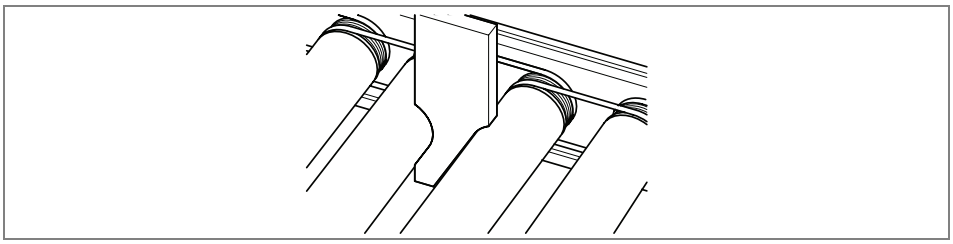
To prevent bending forces on conical RollerDrives, an angular compensation on the motor end is needed.

Mounting tool

For mounting the multi-rib belt, you may want to build a mounting tool as shown in the figure below.



- Place the mounting tool between two rollers to reduce the gap between the adjacent rollers.



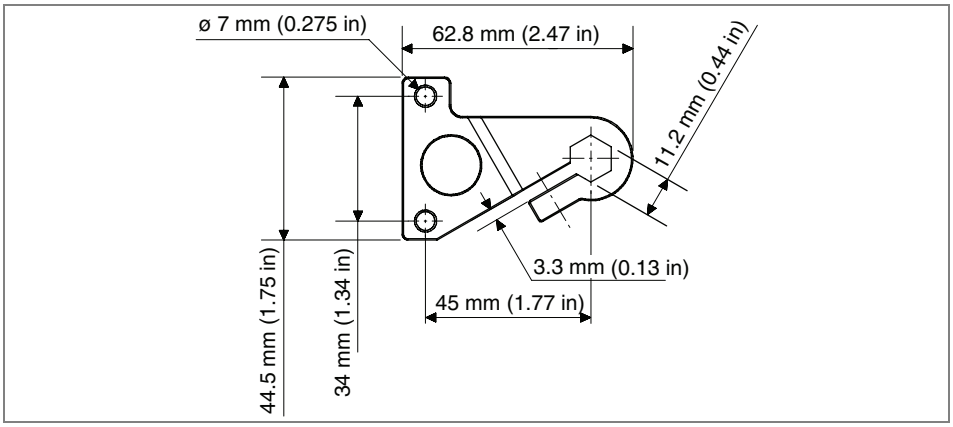
The dimensions of the mounting tool depend on the roller pitch and the roller tube diameter.

Assembly

Anti-spin bracket

If you are using a RollerDrive EC110, you should secure it with an anti-spin bracket (*see "Accessories", page 32*). This prevents the RollerDrive from rotating in the hole in the frame.

Dimensions of the anti-spin bracket (flat up version)

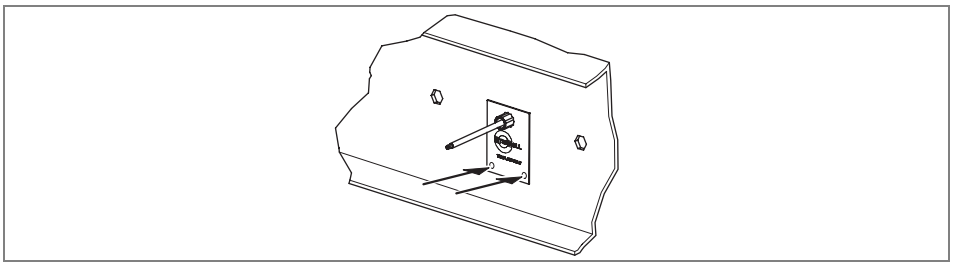


Bill of material of the anti-spin bracket

No.	Description	Qty
1	Bracket flat up	1
	Bracket point up	1
2	Template	1
3	1/8" Allen wrench	1
4	Button head screw	1
5	Serrated flange hex cap screw	2
6	Hex tooth washer nut	2

Mounting the anti-spin bracket

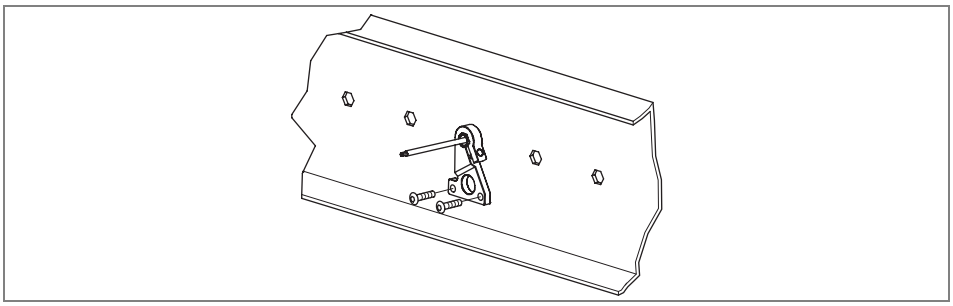
- Ensure that the power of the motor control board is switched off and that it cannot be switched on accidentally.
- If connected, disconnect the motor leads from the motor control board.
- Slide the template over the motor leads and onto the hex shaft.
- Use the template to mark the center of the mounting holes.



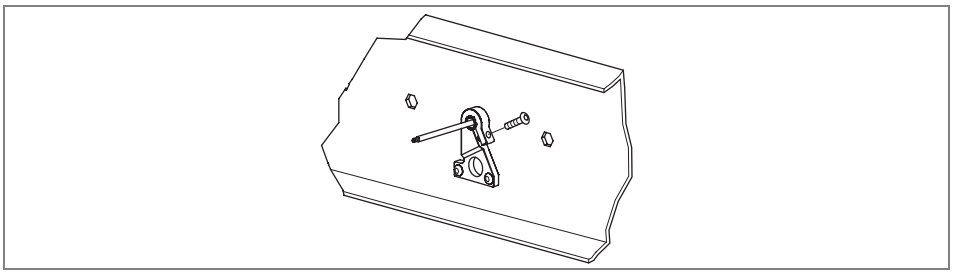
- Remove the template from the hex shaft and the motor leads.
- Drill two ø 7 mm (0.275 in) mounting holes at the marked spots and remove burrs from the backside of the hole.
- Slide the anti-spin bracket with the flat side facing the conveyor frame over the motor leads and onto the hex shaft.

Assembly

- Put two serrated flange hex cap screws in the bottom holes of the bracket and tighten them with the hex tooth washer nuts.



- Install the button head screw in the upper hole of the bracket to secure the shaft to the bracket.



Electrical installation

- If you use the recommended DriveControl (*see "DriveControls for the RollerDrive EC1xx", page 14*), connect the motor plug to the DriveControl.
- If you do not use the DriveControl, connect your control to the pins of the motor plug (for the pin definition *see "Motor plug", page 14*)

Initial startup and operation

Initial startup

Inspections before initial startup

- Ensure that no objects are in contact with rotating or moving parts.
- Ensure that all bolts are tightened according to the specifications.
- Ensure that no additional dangerous areas arise due to interfaces to other components.
- Ensure that the wiring is in accordance with the specification and legal directives.
- Check all protection devices.
- Ensure that no bystanders are in dangerous areas around the conveyor.

For information about startup, see the manual for the DriveControl or your control.

Operation

⚠ CAUTION

Rotating parts and accidental starts
Risk of pinched fingers

- Do not insert fingers between the RollerDrive and the O-ring belt, multi-rib belt or roller chain.
- Do not remove the protection device.
- Keep fingers, hair and loose clothing away from the RollerDrive.

NOTICE

Damage to the motor or the control due to induction

- Do not push items along the roller conveyor by hand.
- Do not spin the RollerDrive manually.

Inspections before every startup

- Check the RollerDrive for visible damage.
- Check all protection devices.
- Ensure that no bystanders are in dangerous areas around the conveyor.
- Clearly specify and monitor the way goods are placed on the conveyor.
- Ensure that the RollerDrive is not blocked.

Ambient operating conditions *see "Technical data", page 9*

Procedure in case of accident or malfunction

- Stop the conveyor at once and ensure that it cannot be started accidentally.
- In case of an accident: Provide first aid and make an emergency call.
- Inform the responsible person.
- Have the malfunction repaired by qualified persons.
- Start the conveyor only after this has been approved by qualified persons.

Maintenance and cleaning

Warning notices concerning maintenance and cleaning

⚠ CAUTION

Risk of injury due to improper handling or accidental motor starts

- ➢ Maintenance work and cleaning may only be executed by qualified and authorized persons.
- ➢ Only perform maintenance work after switching off the power. Ensure that the RollerDrive cannot be turned on accidentally.
- ➢ Set up signs indicating maintenance work.

Maintenance

Checking the RollerDrive

If the RollerDrive is not secured as specified in the installation instructions (*see "Assembly", page 21*), it may rotate in the hole in the conveyor frame. This will result in the roller leads becoming twisted and eventually severed.

- ➢ Monthly check the RollerDrive for visible damage.
- ➢ Annually ensure that the roller shaft is secured properly in the conveyor frame.

Replacing a RollerDrive

If a RollerDrive is damaged or broken down, it has to be replaced.

- ➢ Install a new RollerDrive (*see "Abandonment", page 31* and *see "Inserting the RollerDrive EC1xx in the conveyor frame", page 23*).

Cleaning

Increased surface friction reduces the roller speed since more power is used to overcome the resistance. Therefore, in a dirty environment, periodic cleaning will ensure good contact with the goods and reduce friction.

- ➢ Remove foreign material from the roller with standard cleaners.
- ➢ Do not use sharp-edged tools to clean the roller.

Troubleshooting

Error search

⚠ CAUTION

Risk of injury due to accidental motor starts

- ➢ Error search may only be executed by qualified and authorized persons.
- ➢ Only perform error search after switching off the power. Ensure that the RollerDrive cannot be turned on accidentally.
- ➢ Use caution while searching the error.

Symptom	Possible cause	Help
RollerDrive is not operating.	No power supply	Check 24 VDC power supply at DriveControl.
	Plugs not connected properly	Check cable connection.
RollerDrive is rotating in the wrong direction.	Wrong direction settings	Change setting of direction switch on DriveControl.
RollerDrive is rotating at the wrong speed.	Wrong speed settings	Change setting of potentiometer on DriveControl.
Abnormal noise coming out of the RollerDrive.	Motor or gearbox is damaged.	Replace RollerDrive.
Interrupted RollerDrive operation	Damaged motor cable	Check motor cable for damages. If motor cables are damaged, replace RollerDrive.

Abandonment and disposal

Abandonment

⚠ CAUTION

Risk of injury due to improper handling

- ➢ Abandonment may only be executed by qualified and authorized persons.
- ➢ Only abandon the RollerDrive after switching off the power. Ensure that the RollerDrive cannot be turned on accidentally.

- ➢ Disconnect the motor cable from the control.
- ➢ Unscrew the outer nut at the threaded motor shaft.
- ➢ If the RollerDrive has a spring-loaded idler shaft, push the idler shaft inwards.
- ➢ If the RollerDrive has a FTM8 idler shaft, unscrew the bolt at the idler shaft.
- ➢ Extract the RollerDrive from the conveyor frame.

Disposal

The operator is responsible for the proper disposal of the RollerDrive. In doing so, industry-specific and local provisions must be observed for the disposal of the RollerDrive and its packaging.

Appendix

Accessories

Belts

Part	Characteristics
Toothed belt	• Gates Poly-Chain GT or similar: pitch 8 mm (0.31 in) • Toothed belt width: 11.2 mm (0.44 in) • Hub with 18 teeth
Round belt	• Belts of 4 mm (0.16 in) and max. 5 mm (0.20 in) diameter
Multi-rib belt	• Drive head with 9 grooves for flexible V-ribbed belts • PJ form, ISO 9981, DIN 7867 • Pitch 2.34 mm (0.09 in) • Belts with a max. of 4 ribs

DriveControls

Part	Characteristics	Part #
DC-EC100	Motor control card (without ZPA functionality)	8996
HC-EC100	HybridControl with ZPA and motor control on one board, but can be used separately	9000
HC-EC100 Full	HybridControl with ZPA, motor control and digital I/O handshake	9001
HC-EC110	HybridControl with ZPA and motor control on one board, but can be used separately	9004

Anti-spin bracket

Part	Characteristics	Part #
Anti-spin bracket flat up	Bottom and top of hex are flat	N582
Anti-spin bracket point up	Bottom and top of hex are pointed	N583

Appendix

Manufacturer's declaration

in terms of the EC-Machine Directive 98/37/EC and its amendment 98/79/EC, Annex II B

The manufacturer:

Interroll Corporation

3000 Corporate Drive

Wilmington, NC 28405

hereby declares with sole responsibility that the product range

- RollerDrive Type EC100
- RollerDrive Type EC110

is not a ready-to-use assembly in terms of the EC-Machine Directive and therefore does not fully comply with the requirements of this directive. It must not be put into service until the machinery into which it is to be incorporated has been declared to conform with the provisions of the Machine Directive.

Applied EC Directives:

Machine Directive 98/37/EC and its amendment 98/79/EC

Low Voltage Directive 2006/95/EC

EMC Directive 2004/108/EC

RoHS Directive 2002/95/EC

Applied harmonized norms:

EN ISO 12100 Part1 and Part2

Wilmington, November 7th 2007

Richard Keely

(VP of Manufacturing)

(This declaration can be obtained at www.interroll.com, if needed.)

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